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Version 1.0

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Federal Communications Commission (FCC)

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and the receiver
- Connect the equipment onto an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

Shielded interconnect cables and a shielded AC power cable must be employed with this equipment to ensure compliance with the pertinent RF emission limits governing this device. Changes or modifications not expressly approved by the system's manufacturer could void the user's authority to operate the equipment.

Declaration of Conformity

This device complies with part 15 of the FCC rules. Operation is subject to the following conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

This device is in conformity with the following EC/EMC directives:

- ❑ **EN 55022** Limits and methods of mesurement of radio disturbance characteristics of information technology equipment
- ❑ **EN 61000-3-2** Disturbances in supply systems caused
- ❑ **EN 61000-3-3** Disturbances in supply systems caused by household appliances and similar electrical equipment " Voltage fluctuations"
- ❑ **EN 55024** Information technology equipment-Immunity characteristics-Limits and methods of measurement
- ❑ **EN 60950** Safety for information technology equipment including electrical business equipment
- ❑ **CE marking** CE

Canadian Department of Communications

This class B digital apparatus meets all requirements of the Canadian Interference-causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Réglement sur le matériel brouilieur du Canada.

About the Manual

The manual consists of the following:

Chapter 1 **Introducing the Motherboard**	Describes features of the motherboard.	⇨ page 1
Chapter 2 **Installing the Motherboard**	Describes installation of motherboard components.	⇨ page 7
Chapter 3 **Using BIOS**	Provides information on using the BIOS Setup Utility.	⇨ page 27
Chapter 4 **Trouble Shooting**	Provides basic trouble shooting tips.	⇨ page 45

TABLE OF CONTENTS

Preface i

Chapter 1 1
Introducing the Motherboard 1
Introduction....1
Pakage Contents....1
Specifications....2
Motherboard Components....4
I/O Ports....6

Chapter 2 7
Installing the Motherboard 7
Safety Precautions....7
Installing the Motherboard in a Chassis....7
Checking Jumper Settings....8
Installing Hardware....9
Installing the Processor....9
Installing the CPU Cooler....11
Installing Memory Modules....12
Installing Add-on Cards....14
Connecting Optional Devices....16
Installing a SATA Hard Drive....22
Connecting Case Components....23
Front Panel Header....25

Chapter 3 27
Using BIOS 27
About the Setup Utility....27
The Standard Configuration....27
Entering the Setup Utility....27
Using BIOS....28
BIOS Navigation Keys....29
Main Menu....30
Advanced Menu....31
Power Menu....37
Authentication Menu....39
Security Menu....40
Boot Options Menu....42
Exit Menu....43
Updating the BIOS....44

Chapter 4 **45**
Trouble Shooting **45**
Start up problems during assembly.....45
Start up problems after prolong use.....46
Maintenance and care tips.....46
Basic Troubleshooting Flowchart.....47

Chapter 1
Introducing the Motherboard

Introduction

Thank you for choosing the B85H3-M6 motherboard. This motherboard is a high performance, enhanced function motherboard designed to support the LGA1150 socket for Intel 4th Generation Core™ Family processors for high-end business or personal desktop markets.

This motherboard is based on Intel® B85 Chipset for best desktop platform solution. It supports up to 32 GB of system memory with dual channel DDR3 1600/1333 MHz. One PCI Express x16 Gen3 slot and one PCI Express x16 Gen2(with x4 connectivity) are supported , intended for Graphics Interface. In addition, one PCI Express x1 slot and one PCI slot are for extending usage.

It integrates USB 2.0 and USB 3.0 interface, supporting up to seven USB 2.0 ports(two USB 2.0 ports at rear panel, two USB 2.0 headers support additional four USB 2.0 ports and one 5-pin USB 2.0 header supports one USB 2.0 ports) and four USB 3.0 ports(two USB 3.0 ports at rear panel and one USB 3.0 header supports two USB 3.0 ports).

The motherboard is equipped with advanced full set of I/O ports in the rear panel, including PS/2 mouse and PS/2 keyboard connectors, one Display port (DP), one HDMI port, one D-sub (VGA) port, one DVI port, two USB 3.0 ports, one LAN port, two USB 2.0 ports, and audio jacks for line-in, line-out and microphone.

In addition, this motherboard supports four SATA 6.0Gb/s connectors and one SATA 3.0Gb/s connector.

Package Contents

Your motherboard package ships with the following items:

- ❑ B85H3-M6 Motherboard
- ❑ Quick Installation Guide
- ❑ User Manual
- ❑ DVD
- ❑ I/O Shield
- ❑ 2 SATA Cables

The package contents above are for reference only, please take the actual package items as standard.

Specifications

CPU	•	LGA1150 socket for Intel 4th Generation Core™ Family processors
Chipset	•	Intel® B85 Chipset
Memory	•	Dual-channel DDR3 memory architecture
	•	4 x 240-pin DDR3 DIMM sockets support up to 32 GB
	•	Supports DDR3 1600/1333 MHz
Expansion Slots	•	1 x PCI Express x16 Gen3 slot
	•	1 x PCI Express x16 Gen2(with x4 connectivity) slot
	•	1 x PCI Express x1 slot
	•	1 x PCI slot
Storage	•	Supported by Intel® B85 Express Chipset - 4 x Serial ATA 6.0 Gb/s devices - 1 x Serial ATA 3.0 Gb/s device
Audio	•	Realtek ALC662 6-Ch HD audio CODEC
LAN	•	Realtek RTL8111DP
Rear Panel I/O	•	1 x PS/2 keyboard & PS/2 mouse connectors
	•	1 x Display port(DP)
	•	1 x HDMI port
	•	1 x D-sub port(VGA)
	•	1 x DVI port
	•	2 x USB 3.0 ports
	•	1 x RJ45 LAN connector
	•	2 x USB 2.0 ports
	•	1 x Audio port (Line in, line out and microphone)
Internal I/O Connectors & Headers	•	1 x 24-pin ATX Power Supply connector
	•	1 x 4-pin ATX_12V Power Supply connector
	•	1 x 4-pin CPU_FAN connector
	•	1 x 4-pin SYS_FAN connector
	•	4 x SATA III 6.0Gb/s connectors
	•	1 x SATA II 3.0Gb/s connector
	•	1 x Front panel switch/LED header
	•	1 x Front panel audio header
	•	2 x USB 2.0 headers support additional four USB 2.0 ports
	•	1 x 5-pin USB 2.0 header supports additional one USB 2.0 port
	•	1 x USB 3.0 header supports additional two USB 3.0 ports
	•	2 x Onboard Serial port headers (COM)
	•	1 x Clear CMOS header with jumper
	•	1 x Onboard parallel port header (LPT)
	•	1 x Buzzer
	•	1 x Case open header

System BIOS	•	AMI BIOS with 96Mb SPI Flash ROM
	•	Supports Plug and Play, STR (S3) / STD (S4) , Hardware monitor
	•	Supports ACPI & DMI
	•	Audio, LAN, can be disabled in BIOS
	•	Supports Multi-Language
	•	F7 hot key for boot up devices option
	•	Supports PgUp clear CMOS Hotkey(Has PS2KB Model only)
	•	Supports Dual/Triple Display(depends on display output)
Form Factor	•	Micro ATX Size, 244mm x 244mm

Motherboard Components

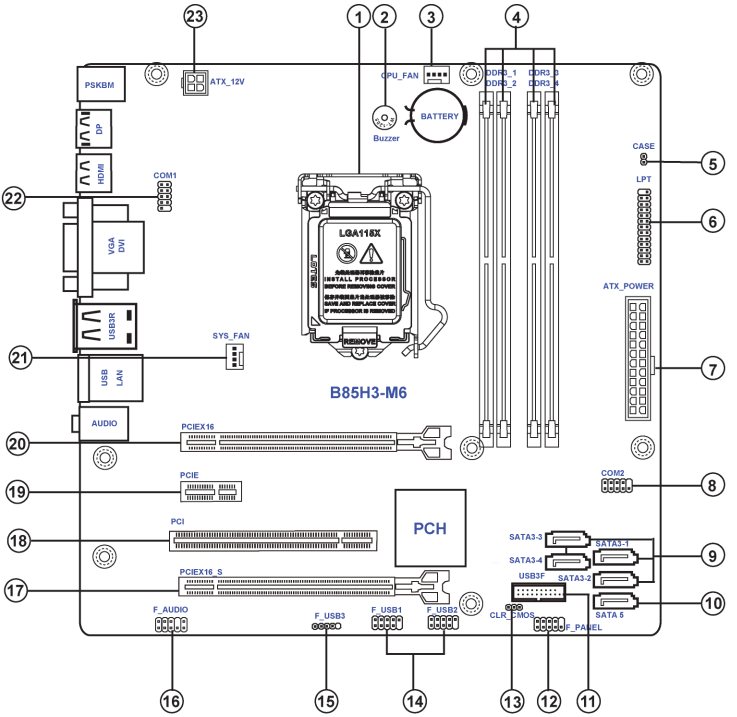
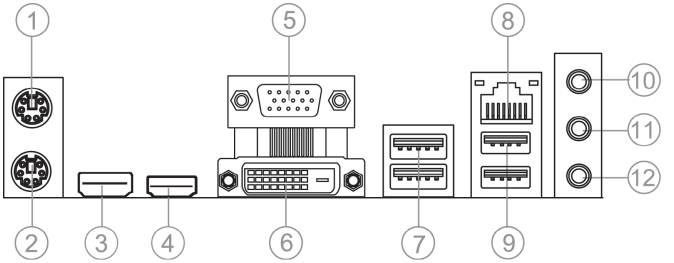


Table of Motherboard Components

LABEL	COMPONENTS
1. CPU	Supports the LGA1150 socket for 4th Generation Core™ Family Processors
2. Buzzer	Buzzer
3. CPU_FAN	CPU cooling fan connector
4. DDR3_1~4	240-Pin DDR3 long DIMM slots (Channel A: DIMM1~2 Channel B: DIMM3~4)
5. CASE	Case open header
6. LPT	Onboard parallel port header
7. ATX_POWER	Standard 24-pin ATX power connector
8. COM2	Onboard serial port header
9. SATA3_1~4	Serial ATA 6.0Gb/s connectors
10. SATA 5	Serial ATA 3.0Gb/s connector
11. USB3F	Front panel USB 3.0 connector
12. F_PANEL	Front panel switch/LED header
13. CLR_CMOS	Clear CMOS header with jumper
14. F_USB1~2	Front panel USB 2.0 headers
15. F_USB3	Front panel USB 2.0 header
16. F_AUDIO	Front panel audio header
17. PCIEX16_S	PCI Express x16 slot (runs at X4 mode)
18. PCI	32-bit add-on card slot
19. PCIE	PCI Express x1 slot
20. PCIEX16	PCI Express x16 slot
21. SYS_FAN	System cooling fan connector
22. COM1	Onboard serial port header
23. ATX_12V	Auxiliary 4-pin power connector

I/O Ports



1. PS/2 Mouse
Use the upper PS/2 port to connect the PS/2 Mouse.

2. PS/2 Keyboard
Use the lower PS/2 port to connect the PS/2 Keyboard.

3. Display Port (DP)
You can connect the display device to the display port.

4. HDMI Port
You can connect the display device to the HDMI port.

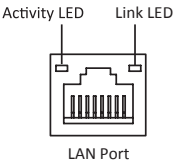
5. VGA Port
Connect your monitor to the VGA port.

6. DVI Port
Connect your monitor to the DVI port.

7. USB 3.0 Ports
Use the USB 3.0 ports to connect USB 3.0 devices.

8. LAN Port
Connect an RJ-45 jack to the LAN port to connect your computer to the Network.

Transmission Speed	LAN LED	Status	Description
100M	Activity LED	OFF	No data
		Orange blinking	Active
	Link LED	OFF	No link
		Green	Link
Giga	Activity LED	OFF	No data
		Orange blinking	Active
	Link LED	OFF	No link
		Green	Link



9. USB 2.0 Ports
Use the USB 2.0 ports to connect USB 2.0 devices.

10. Line-in (blue)
It can be connected to an external CD/DVD player, Tape player or other audio devices for audio input.

11. Line-out (green)
It is used to connect to speakers or headphones.

12. Microphone (pink)
It is used to connect to a microphone.

Chapter 2
Installing the Motherboard

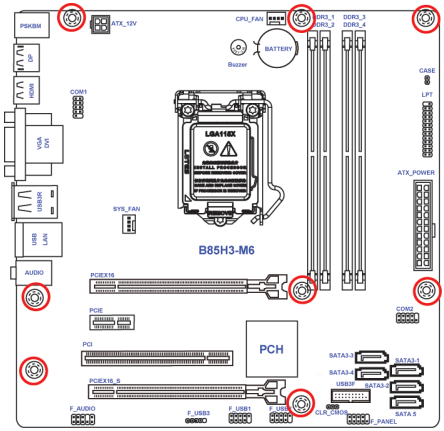
2-1. Safety Precautions

Follow these safety precautions when installing the motherboard:

- Wear a grounding strap attached to a grounded device to avoid damage from static electricity.
- Discharge static electricity by touching the metal case of a safely grounded object before working on the motherboard.
- Leave components in the static-proof bags.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.

2-2. Installing the motherboard in a Chassis

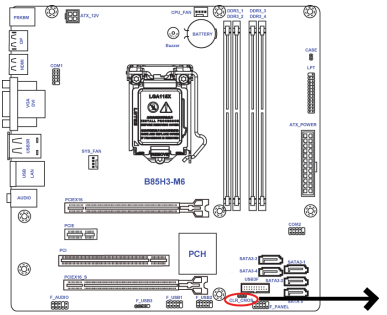
This motherboard carries a Micro ATX form factor of 244 x 244 mm. Choose a chassis that accommodates this form factor. Make sure that the I/O template in the chassis matches the I/O ports installed on the rear edge of the motherboard. Most system chassis have mounting brackets installed in the chassis, which corresponds to the holes in the motherboard. Place the motherboard over the mounting brackets and secure the motherboard onto the mounting brackets with screws.

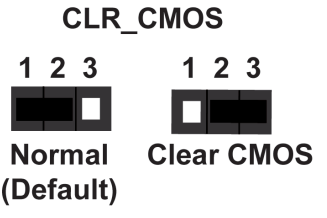


Do not over-tighten the screws as this can stress the motherboard.

2-3. Checking Jumper Settings

The following illustration shows the location of the motherboard jumpers. Pin 1 is labeled.





To avoid the system instability after clearing CMOS, we recommend users to enter the main BIOS setting page to "Load Default Settings" and then "Save and Exit Setup".

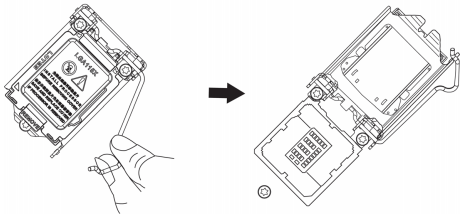
2-4. Installing Hardware

2-4-1. Installing the Processor

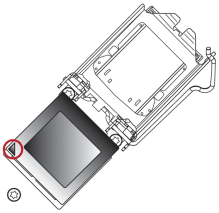
- This motherboard has an LGA1150 socket.
- When choosing a processor, consider the performance requirements of the system. Performance is based on the processor design, the clock speed and system bus frequency of the processor, and the quantity of internal cache memory and external cache memory.
- You may be able to change the settings in the system Setup Utility. We strongly recommend you do not over-clock processor or other components to run faster than their rated speed.
- The following illustration shows CPU installation components.

A. Press the hook of lever down with your thumb and pull it to the right side to release it from retention tab.

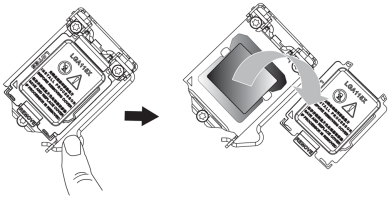
B. Lift the tail of the load lever and rotate the load plate to fully open position.



C. Grasp the edge of the package substrate. Make sure pin 1 indicator is on your bottom-left side. Aim at the socket and place the package carefully into the socket by purely vertical motion.



D. Rotate the load plate onto the package IHS (Intergraded Heat Spreader). Engage the load lever while pressing down lightly onto the load plate. Secure the load lever with the hook under retention tab. Then the cover will flick automatically.

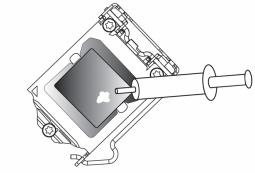


Please save and replace the cover onto the CPU socket if processor is removed.

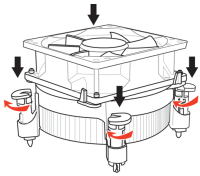
2-4-2. Installing the CPU Cooler

- Install the cooling fan in a well-lit work area so that you can clearly see the motherboard and processor socket.
- Avoid using cooling fans with sharp edges in case the fan casing and the clips cause serious damage to the motherboard or its components.
- To achieve better airflow rates and heat dissipation, we suggest that you use a high quality fan with 3800 rpm at least. CPU fan and heat sink installation procedures may vary with the type of CPU fan/heatsink supplied. The form and size of fan/heatsink may also vary.
- DO NOT remove the CPU cap from the socket before installing a CPU.
- Return Material Authorization (RMA) requests will be accepted only if the motherboard comes with the cap on the LGA1150 socket.
- The following illustration shows how to install CPU fan.

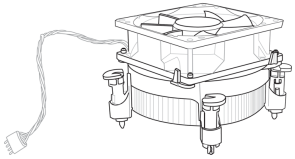
A. Apply some thermal grease onto the contacted area between the heatsink and the CPU, and make it to be a thin layer.



B. Fasten the cooling fan supporting base onto the CPU socket on the motherboard. And make sure the CPU fan is plugged to the CPU fan connector.



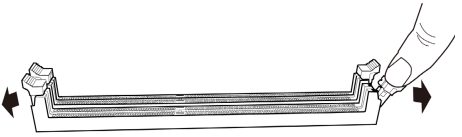
C. Connect the CPU cooler power connector to the CPU_FAN connector.



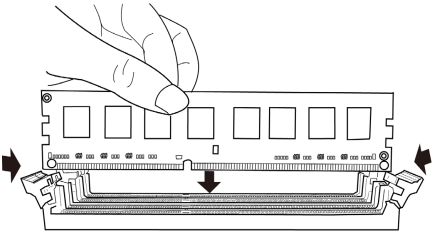
2-4-3. Installing Memory Modules

- This motherboard accommodates four memory modules. It can support four 240-pin DDR3 1600/1333.
- Do not remove any memory module from its antistatic packaging until you are ready to install it on the motherboard. Handle the modules only by their edges. Do not touch the components or metal parts. Always wear a grounding strap when you handle the modules.
- You must install at least one module in any of the four slots. Total memory capacity is 32 GB.
- Refer to the following to install the memory modules.

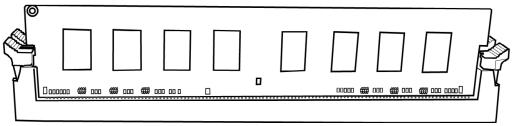
A. Push the latches on each side of the DIMM slot down.



B. Install the DIMM module into the slot and press it firmly down until it fits in place correctly. Check that the cutouts on the DIMM module edge connector match the notches in the DIMM slot.



C. The slot latches are levered upwards and latch on to the edges of the DIMM.



The four DDR3 memory sockets (DDR3_1, DDR3_2, DDR3_3 and DDR3_4) are divided into two channels and each channel has two memory sockets as following:

Channel A: DDR3_1, DDR3_2
Channel B: DDR3_3, DDR3_4

Recommend memory configuration

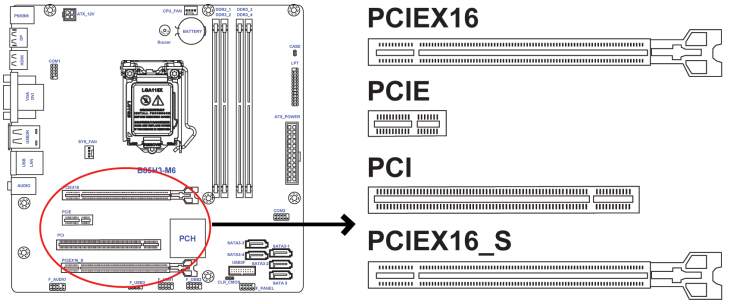
Model	Sockets			
	DDR3_1	DDR3_2	DDR3_3	DDR3_4
1 DIMM	~	Populated	~	~
1 DIMM	~	~	~	Populated
2 DIMMs	~	Populated	~	Populated
3 DIMMs	Populated	Populated	~	Populated
3 DIMMs	~	Populated	Populated	Populated
4 DIMMs	Populated	Populated	Populated	Populated

Due to Intel CPU spec definition, please follow the table above for recommended memory configuration.

1. For best performance and compatibility, we recommend that users give priority to the white DIMMs (DDR3_2/DDR3_4) when installing DIMMs.
2. We suggest users not to mix memory type. It is recommended to use the same brand and type memory on this motherboard.

2-4-4. Installing Add-on Cards

The slots on this motherboard are designed to hold expansion cards and connect them to the system bus. Expansion slots are a means of adding or enhancing the motherboard's features and capabilities. With these efficient facilities, you can increase the motherboard's capabilities by adding hardware that performs tasks that are not part of the basic system.



PCIEX16 Slot The PCI Express x16 slot is used to install an external PCI Express graphics card that is fully compliant to the PCI Express Base Specification revision 3.0.

PCIE Slot The PCI Express x1 slot is fully compliant to the PCI Express Base Specification revision 2.0.

PCI Slot This motherboard is equipped with one standard PCI slot. PCI stands for Peripheral Component Interconnect and is a bus standard for expansion cards, which for the most part, is a supplement of the older ISA bus standard. The PCI slot on this board is PCI v2.2 compliant.

PCIEX16_S Slot The PCI Express x16 slot runs at x4 mode, which is fully compliant to the PCI Express Base Specification revision 2.0.

Before installing an add-on card, check the documentation for the card carefully. If the card is not Plug and Play, you may have to manually configure the card before installation.

Follow these instructions to install an add-on card:

1 Remove a blanking plate from the system case corresponding to the slot you are going to use.

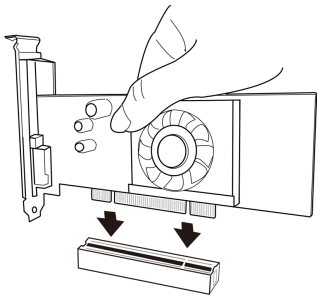
2 Install the edge connector of the add-on card into the expansion slot. Ensure that the edge connector is correctly seated in the slot.

3 Secure the metal bracket of the card to the system case with a screw.

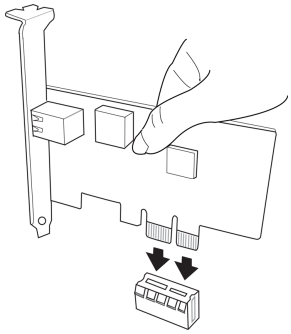
1. For some add-on cards, for example graphics adapters and network adapters, you have to install drivers and software before you can begin using the add-on card.

2. The onboard PCI interface does not support 64-bit SCSI cards.

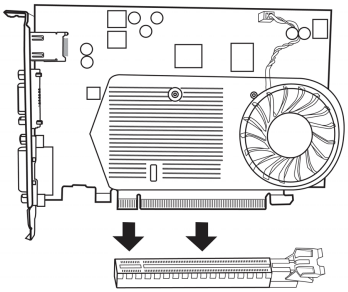
Please refer to the following illustrations to install the add-on card:



Install the VGA Card in the PCI slot



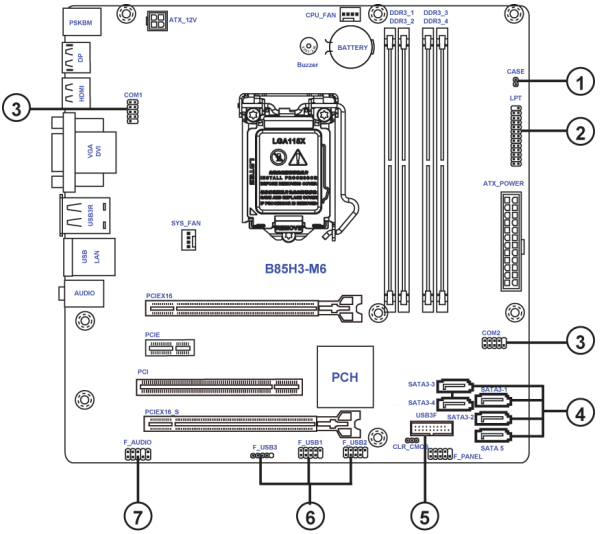
Install the LAN Card in the PCIE X1 slot



Install the VGA Card in the PCIE X16 slot

2-4-5. Connecting Optional Devices

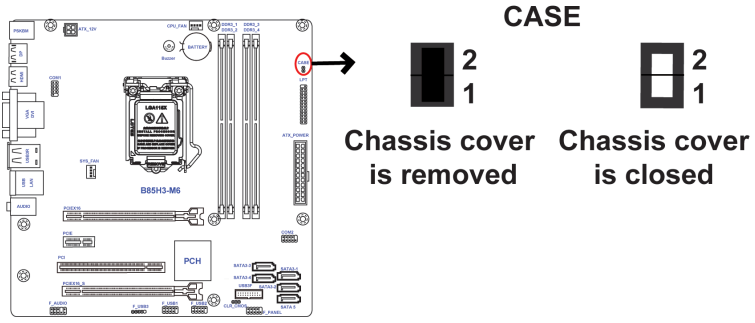
Refer to the following for information on connecting the motherboard's optional devices:



No.	Components	No.	Components
1	CASE	5	USB3F
2	LPT	6	F_USB1~2&F_USB3
3	COM1~2	7	F_AUDIO
4	SATA3_1~4 & SATA 5	~~	~~

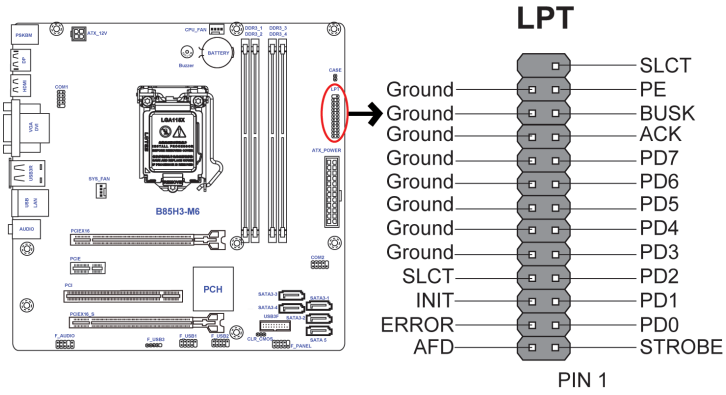
1. CASE: Chassis Intrusion Detect Header

This detects if the chassis cover has been removed. This function needs a chassis equipped with instrusion detection switch and needs to be enabled in BIOS.



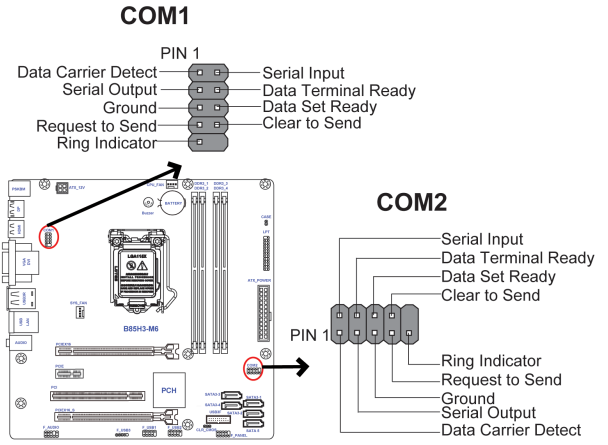
2. LPT: Onboard parallel port header

This is a header that can be used to connect to the printer, scanner or other devices.



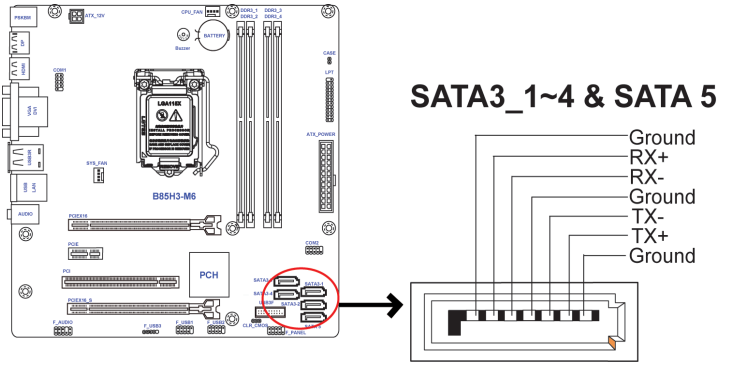
3. COM: Onboard serial port header

Connect a serial port extension bracket to this header to add a serial port to your system.



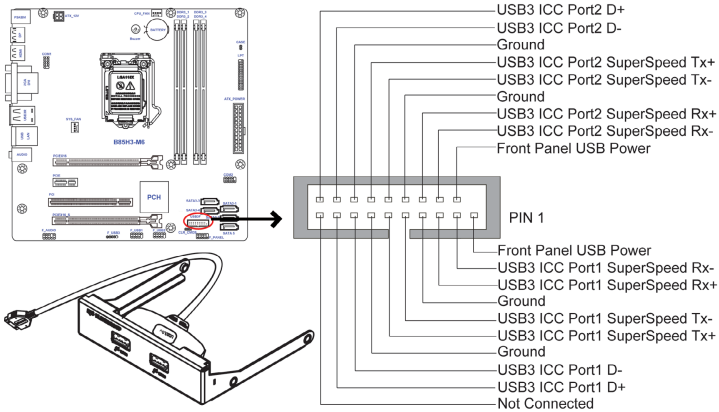
4. SATA3_1~4 & SATA 5: Serial ATA connectors

SATA3_1~4 connectors are used to support the Serial ATA 6.0Gb/s device, SATA 5 connector is used to support the Serial ATA 3.0Gb/s device, simpler disk drive cabling and easier PC assembly. It eliminates limitations of the current Parallel ATA interface. But maintains register compatibility and software compatibility with Parallel ATA.



5. USB3F: Front Panel USB 3.0 header

This Motherboard implements one USB 3.0 header supporting 2 extra front USB 3.0 ports, which delivers 5Gb/s transfer rate.

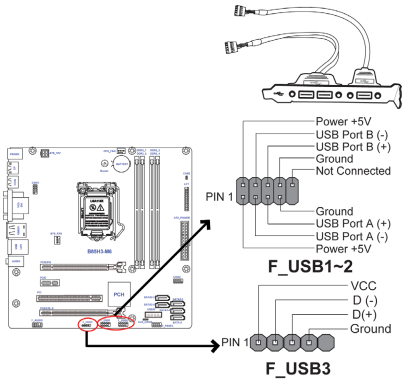


USB3F

Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

6. F_USB1~3: Front Panel USB 2.0 headers

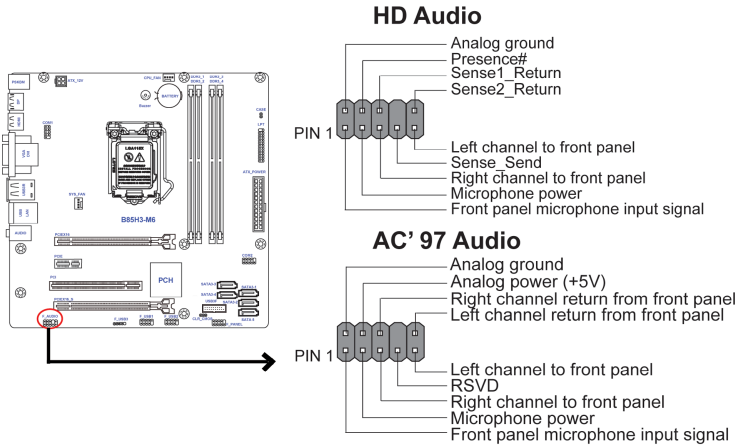
The motherboard has three USB 2.0 headers supporting five USB 2.0 ports. 5-pin F_USB3 supports one USB 2.0 device.Additionally, some computer cases have USB ports at the front of the case. If you have this kind of case, use auxiliary USB connector to connect the front-mounted ports to the motherboard.



Please make sure that the USB cable has the same pin assignment as indicated above. A different pin assignment may cause damage or system hang-up.

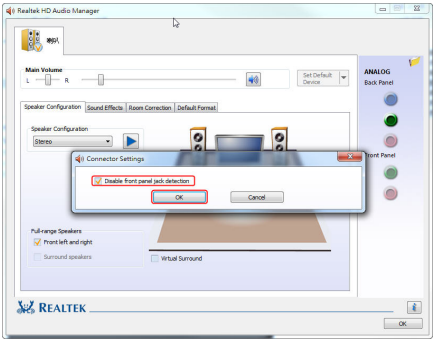
7. F_AUDIO: Front Panel Audio Header

The front panel audio header allows the user to install auxiliary front-oriented microphone and line-out ports for easier access. This header supports HD audio by default. If you want connect an AC' 97 front panel audio to HD onboard headers, please set as below picture.



AC' 97 Audio Configuration: To enable the front panel audio connector to support AC97 Audio mode.

If you use AC' 97 Front Panel, please tick off the option of "Disabled Front Panel Detect ". If you use HD Audio Front Panel, please don' t tick off "Disabled Front Panel Detect ".



** For reference only*

If you use AC' 97 Front Panel, please don' t tick off "Using Front Jack Detect ". If you use HD Audio Front Panel, please tick off the option of "Using Front Jack Detect ".

** For reference only*

2-4-6. Installing a SATA Hard Drive

This section describes how to install a SATA Hard Drive.

About SATA Connectors

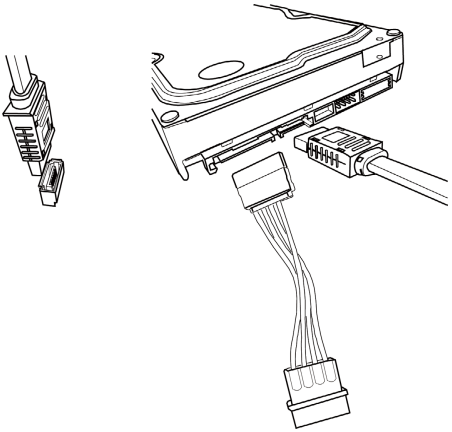
Your motherboard features Six SATA connectors supporting a total of six drives. SATA refers to Serial ATA (Advanced Technology Attachment) is the standard interface for the IDE hard drives which are currently used in most PCs. These connectors are well designed and will only fit in one orientation. Locate the SATA connectors on the motherboard and follow the illustration below to install the SATA hard drives.

Installing Serial ATA Hard Drives

To install the Serial ATA (SATA) hard drives, use the SATA cable that supports the Serial ATA protocol. This SATA cable comes with a SATA power cable. You can connect either end of the SATA cable to the SATA hard drive or the connector on the motherboard.

Refer to the illustration below for proper installation:

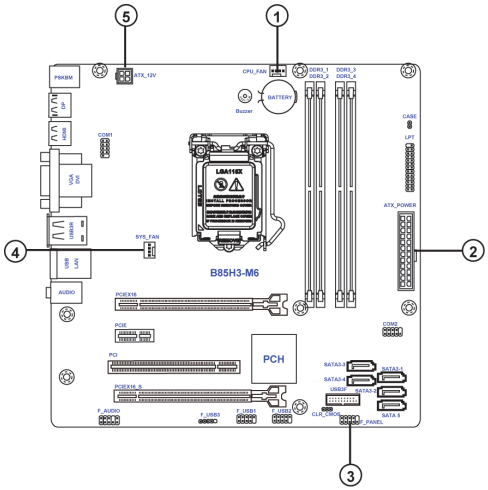
1 Attach either cable end to the connector on the motherboard.
2 Attach the other cable end to the SATA hard drive.
3 Attach the SATA power cable to the SATA hard drive and connect the other end to the power supply.



** For reference only*

2-4-7. Connecting Case Components

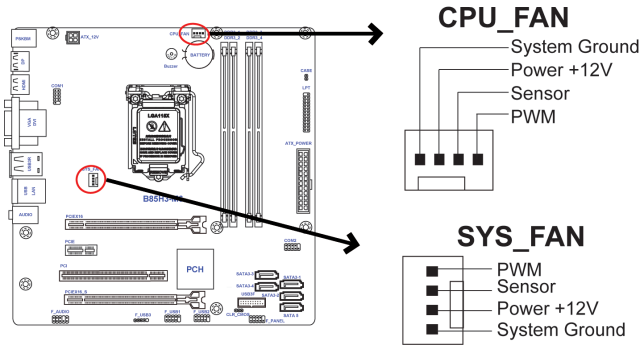
After you have installed the motherboard into a case, you can begin connecting the motherboard components. Refer to the following:



No.	Components	No.	Components
1	CPU_FAN	4	SYS_FAN
2	ATX_POWER	5	ATX_12V
3	F_PANEL	~~	~~

1. CPU_FAN (CPU cooling FAN Power Connector) & 4. SYS_FAN (System Cooling FAN Power Connector)

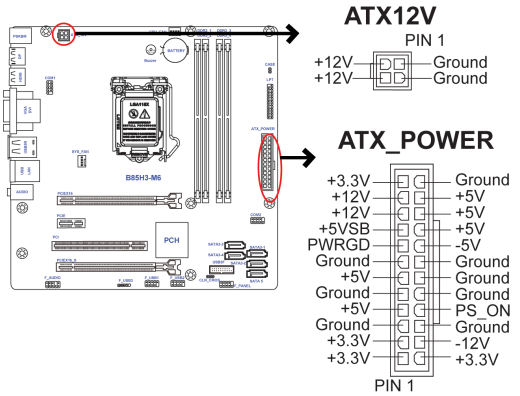
Connect the CPU cooling fan cable to **CPU_FAN**.
Connect the system cooling fan connector to **SYS_FAN**.



Users please note that the fan connector supports the CPU cooling fan of 1.1A ~ 2.2A (26.4W max) at +12V.

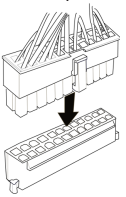
2. ATX_POWER (ATX 24-pin Power Connector) & 5. ATX12V (ATX 12V Power Connector)

Connect the standard power supply connector to **ATX_POWER**.
Connect the auxiliary case power supply connector to **ATX12V**.



Connecting 24-pin power cable

The ATX 24-pin connector allows you to connect to ATX v2.x power supply.

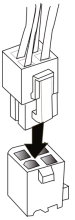


24-pin power cable

With ATX v2.x power supply, users please note that when installing 24-pin power cable, the latches of power cable and the ATX match perfectly.

Connecting 4-pin power cable

The ATX12V4P power connector is used to provide power to the CPU.

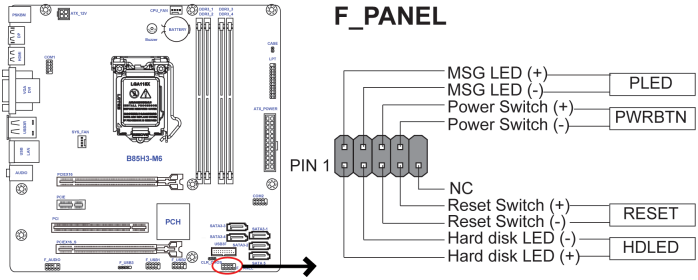


4-pin power cable

When installing 4-pin power cable, the latches of power cable and the ATX12V4P match perfectly.

3. Front Panel Header

The front panel header (F_PANEL) provides a standard set of switch and LED headers commonly found on ATX or Micro ATX cases. Refer to the table below for information:



Hard Drive Activity LED

Connecting pins 1 and 3 to a front panel mounted LED provides visual indication that data is being read from or written to the hard drive. For the LED to function properly, an IDE drive should be connected to the onboard IDE interface. The LED will also show activity for devices connected to the SCSI (hard drive activity LED) connector.

Power/Sleep/Message waiting LED

Connecting pins 2 and 4 to a single or dual-color, front panel mounted LED provides power on/off, sleep, and message waiting indication.

Reset Switch

Supporting the reset function requires connecting pin 5 and 7 to a momentary-contact switch that is normally open. When the switch is closed, the board resets and runs POST.

Power Switch

Supporting the power on/off function requires connecting pins 6 and 8 to a momentary-contact switch that is normally open. The switch should maintain contact for at least 50 ms to signal the power supply to switch on or off. The time requirement is due to internal de-bounce circuitry. After receiving a power on/off signal, at least two seconds elapses before the power supply recognizes another on/off signal.

This concludes Chapter 2. The next chapter covers the BIOS.

Memo

Chapter 3
Using BIOS

About the Setup Utility

The computer uses the latest "American Megatrends Inc." BIOS with support for Windows Plug and Play. The CMOS chip on the motherboard contains the ROM setup instructions for configuring the motherboard BIOS.

The BIOS (Basic Input and Output System) Setup Utility displays the system's configuration status and provides you with options to set system parameters. The parameters are stored in battery-backed-up CMOS RAM that saves this information when the power is turned off. When the system is turned back on, the system is configured with the values you stored in CMOS.

The BIOS Setup Utility enables you to configure:

- Hard drives, diskette drives and peripherals
- Video display type and display options
- Password protection from unauthorized use
- Power Management features

The settings made in the Setup Utility affect how the computer performs. Before using the Setup Utility, ensure that you understand the Setup Utility options.

This chapter provides explanations for Setup Utility options.

The Standard Configuration

A standard configuration has already been set in the Setup Utility. However, we recommend that you read this chapter in case you need to make any changes in the future.

This Setup Utility should be used:

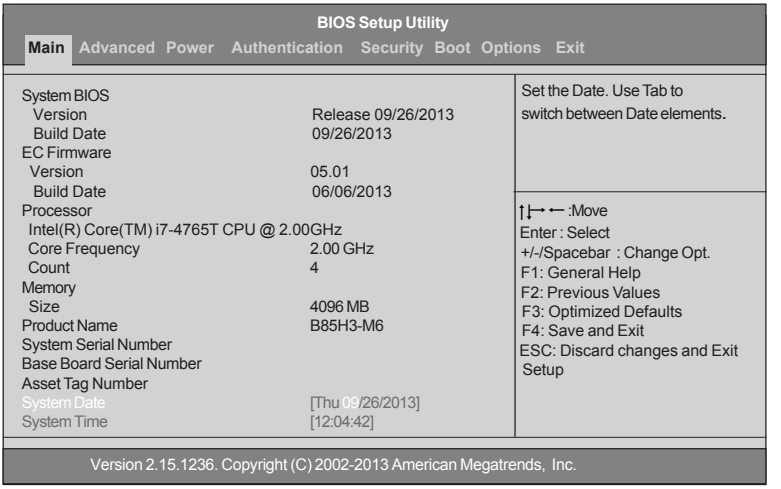
- when changing the system configuration
- when a configuration error is detected and you are prompted to make changes to the Setup Utility
- when trying to resolve IRQ conflicts
- when making changes to the Power Management configuration
- when changing the password or making other changes to the Security Setup

Entering the Setup Utility

When you power on the system, BIOS enters the Power-On Self Test (POST) routines. POST is a series of built-in diagnostics performed by the BIOS. After the POST routines are completed, the following message appears:

Press DEL to enter SETUP

Press the delete key to access BIOS Setup Utility.



Using BIOS

When you start the Setup Utility, the main menu appears. The main menu of the Setup Utility displays a list of the options that are available. A highlight indicates which option is currently selected. Use the cursor arrow keys to move the highlight to other options. When an option is highlighted, execute the option by pressing <Enter>.

Some options lead to pop-up dialog boxes that prompt you to verify that you wish to execute that option. Other options lead to dialog boxes that prompt you for information.

Some options (marked with a triangle▶) lead to submenus that enable you to change the values for the option. Use the cursor arrow keys to scroll through the items in the submenu.

In this manual, default values are enclosed in parenthesis. Submenu items are denoted by a triangle▶.

The default BIOS setting for this motherboard apply for most conditions with optimum performance. We do not suggest users change the default values in the BIOS setup and take no responsibility to any damage caused by changing the BIOS settings.

BIOS Navigation Keys

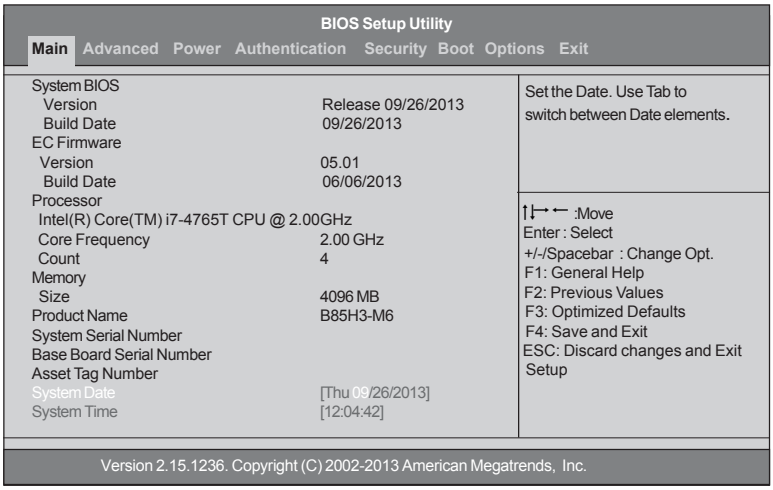
The BIOS navigation keys are listed below:

KEY	FUNCTION
ESC	Exits the current menu
↑↓→←	Scrolls through the items on a menu
+/-	Change Opt.
Enter	Select
F1	General Help
F2	Previous Value
F3	Optimized Defaults
F4	Save & Exit

For the purpose of better product maintenance, the manufacture reserves the right to change the BIOS items presented in this manual. The BIOS setup screens shown in this chapter are for reference only and may differ from the actual BIOS. Please visit the manufacture's website for updated manual.

Main Menu

When you enter the BIOS Setup program, the main menu appears, giving you an overview of the basic system information. Select an item and press <Enter> to display the submenu.



System Serial Number

This item shows the information of system serial number.

Asset Tag Number

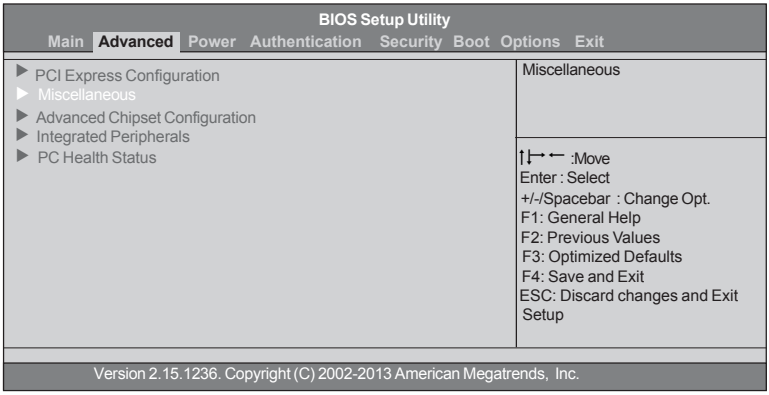
This item shows the information of system asset tag number.

System Date & Time

The Date and Time items show the current date and time on the computer. If you are running a Windows OS, these items are automatically updated whenever you make changes to the Windows Date and Time Properties utility.

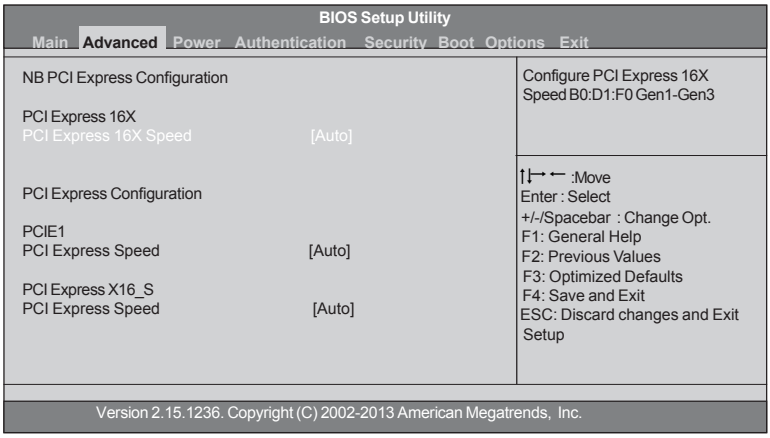
Advanced Menu

This page sets up more advanced information about your system. Handle this page with caution. Any changes can affect the operation of your computer.



▶PCI Express Configuration

Scroll to this item and press <Enter> to view the following screen:


BIOS Setup Utility
Main Advanced Power Authentication Security Boot Options Exit
NB PCI Express Configuration
PCI Express 16X
PCI Express 16X Speed [Auto]
PCI Express Configuration
PCIE1
PCI Express Speed [Auto]
PCI Express X16_S
PCI Express Speed [Auto]
Configure PCI Express 16X Speed B0:D1:F0 Gen1-Gen3
:Move
Enter : Select
+/-/Spacebar : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save and Exit
ESC: Discard changes and Exit Setup
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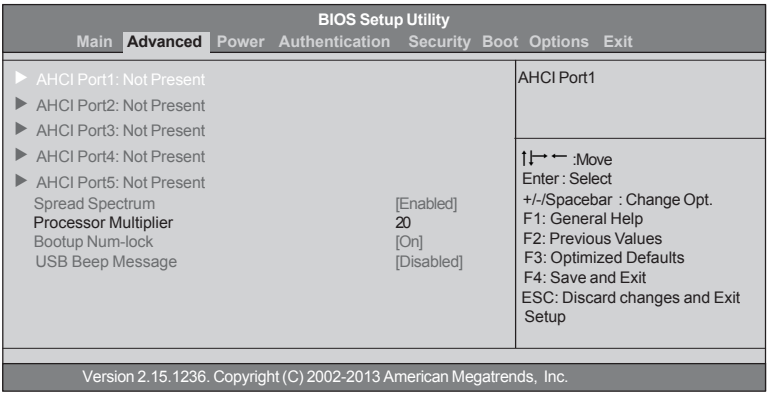
PCI Express 16X/PCIE1/PCI Express X16_S speed (Auto)

This item allows users to configure the PCI Express 16X/PCIE1/PCI Express X16_S speed.

Press <Esc> to return to the Advanced Menu page.

▶Miscellaneous

Scroll to this item and press <Enter> to view the following screen:



AHCI Port1~5

This motherboard supports five SATA channels and each channel allows one SATA device to be installed. Use these items to configure each device on the IDE channel.

Spread Spectrum (Enabled)

Use this item to enable or disable system Spread Spectrum function, EMI (Electro-Magnetic Interface) will reduce if this item is enabled.

Processor Multiplier (20)

This item shows the information of the processor multiplier.

Bootup Num-Lock (On)

This item determines if the Num Lock key is active or inactive at system start-up time.

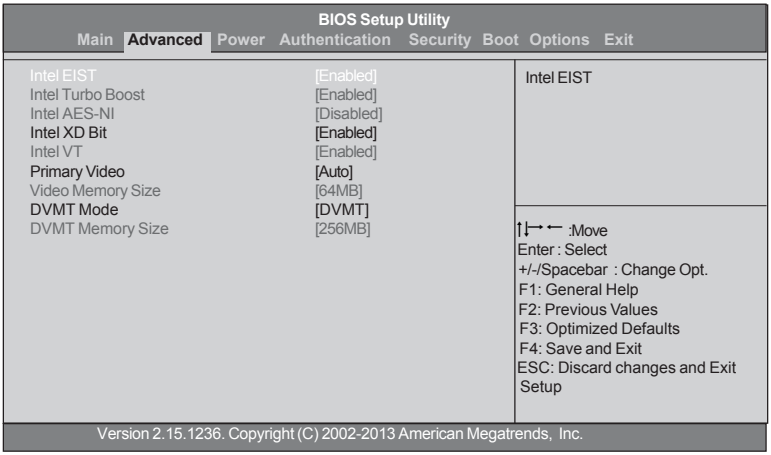
USB Beep Message (Disabled)

This item disables/enables the beep during USB device enumeration.

Press <Esc> to return to the Advanced Menu page.

▶Advanced Chipset Configuration

This item allows you to enable or disable the Intel AES-NI technology.



Intel EIST (Enabled)

This item allows users to enable or disable the EIST(Enhanced Intel SpeedStep technology).

Intel Turbo Boost (Enabled)

This item enables or disables Intel Turbo Boost.

Intel AES-NI (Disabled)

This item allows users to enable or disable the Intel AES-NI.

Intel XD Bit (Enabled)

This item allows users to enable or disable the Intel XD Bit.

Intel VT (Enabled)

This item allows you to enable or disable the Intel VT function.

Primary Video (Auto)

This item indicates the primary video device setting.

Video Memory Size (64MB) *

This item applies to chipset/motherboards capable of the HyperMemory Support.

DVMT Mode (DVMT) *

DVMT is Dynamic Video Memory Technology. This item shows the Mode of DVMT.

DVMT Memory Size (256MB) *

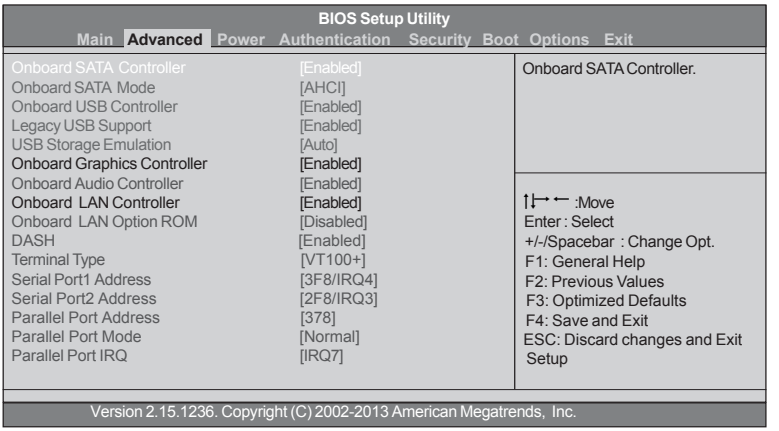
When set to DVMT Mode, the graphics chip will dynamically allocate system memory as graphics memory, according to system and graphics requirements.

** These items will be hidden when Onboard Graphics Controller is set to be disabled or there is no Onboard Graphics Controller.*

Press <Esc> to return to the Advanced Menu page.

►Integrated Peripherals

This page sets up some parameters for peripheral devices connected to the system.



Onboard SATA Controller (Enabled)

This item allows you to enable or disable the onboard SATA controller.

Onboard SATA Mode (AHCI)

Use this item to select the mode of the Serial ATA.

Onboard USB Controller (Enabled)

Use this item to enable or disable the onboard USB controller. We recommend users keep the default value.

Legacy USB Support (Enabled)

Use this item to enable or disable support for legacy USB devices. Disabling it might cause the USB devices not to work properly.

USB Storage Emulation (Auto)

If Auto, USB device equal or less than 2GB will be emulated as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD (Ex. ZIP drive).

Onboard Graphics Controller (Enabled)

This item indicates the status of the onboard graphics controller.

Onboard Audio Controller (Enabled)

This item enables or disables the onboard audio controller.

Onboard LAN Controller (Enabled)

This option allows you to control the onboard LAN device.

Onboard LAN Option ROM (Disabled)

This item enables or disables the onboard LAN option ROM function.

DASH (Enabled)

This item allows you to enable or disable the DASH function.

.

Terminal Type (VT100+)

Use this item to select the mode of the Terminal Type.

Serial Port1 Address (3F8/IRQ4)

Use this item to enable or disable the onboard COM1 serial port, and to assign a port address.

Serial Port2 Address (2F8/IRQ3)

Use this item to enable or disable the onboard parallel port, and to assign a port address.

Parallel Port Address (378)

Use this item to enable or disable the onboard COM2 serial port, and to assign a port address.

Parallel Port Mode (Normal)

Use this item to select the parallel port mode. You can select Normal (Standard Parallel Port), ECP (Extended Capabilities Port), EPP (Enhanced Parallel Port), or Bpp (Bi-Directional Parallel Port).

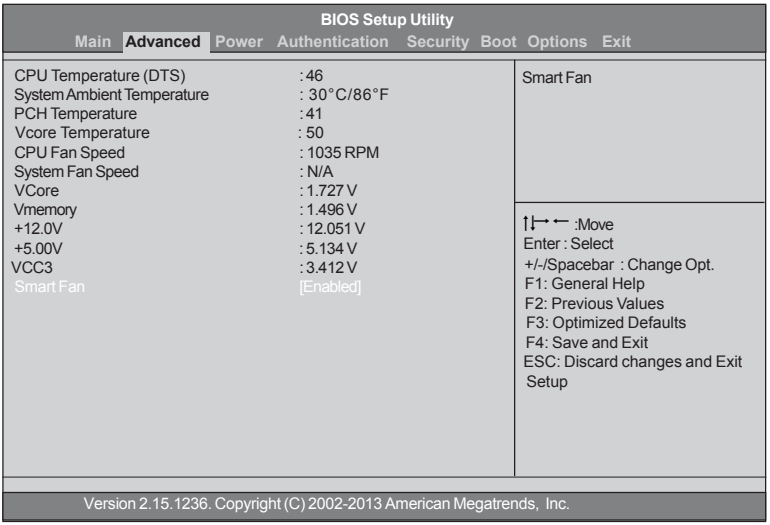
Parallel Port IRQ (IRQ7)

Use this item to assign IRQ to the parallel port.

Press <Esc> to return to the Advanced Menu page.

▶PC Health Status

On motherboards support hardware monitoring, this item lets you monitor the parameters for critical voltages, temperatures and fan speeds.


BIOS Setup Utility
Main Advanced Power Authentication Security Boot Options Exit
CPU Temperature (DTS) : 46
System Ambient Temperature : 30°C/86°F
PCH Temperature : 41
Vcore Temperature : 50
CPU Fan Speed : 1035 RPM
System Fan Speed : N/A
VCore : 1.727 V
Vmemory : 1.496 V
+12.0V : 12.051 V
+5.00V : 5.134 V
VCC3 : 3.412 V
Smart Fan [Enabled]
Smart Fan
↑↓→← :Move
Enter : Select
+/-/Spacebar : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save and Exit
ESC: Discard changes and Exit
Setup
Version 2.15.1236. Copyright (C) 2002-2013 American Megatrends, Inc.

CPU Temperature (DTS)

This item shows the CPU DTS data for thermal reference.

System Ambient Temperature

This item shows the system Ambient temperature.

Smart Fan (Enabled)

This item shows you to disable/enable the control of the CPU fan speed by changing the fan voltage.

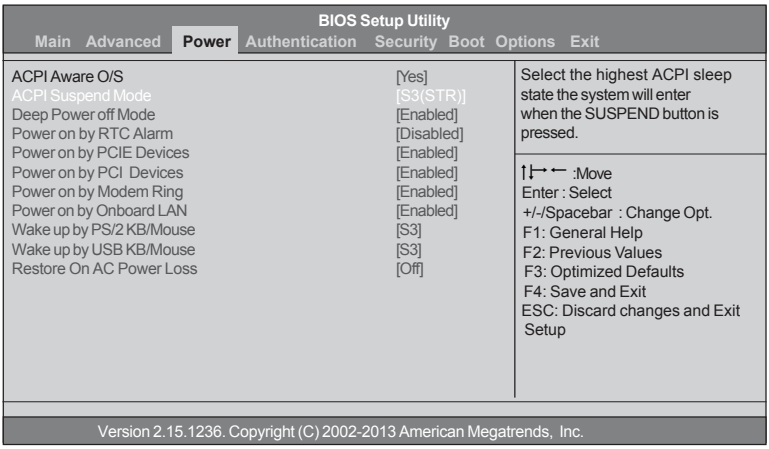
System Component Characteristics

These items display the monitoring of the overall inboard hardware health events, such as System & CPU temperature, CPU voltage, CPU & system fan speed...etc.

- PCH Temperature
- Vcore Temperature
- CPU Fan Speed
- System Fan Speed
- Vcore
- Vmemory
- + 12.0 V
- + 5.00V
- VCC3

Power Menu

This page sets up some parameters for system power management operation.


BIOS Setup Utility
Main Advanced Power Authentication Security Boot Options Exit
ACPI Aware O/S [Yes]
ACPI Suspend Mode [S3(STR)]
Deep Power off Mode [Enabled]
Power on by RTC Alarm [Disabled]
Power on by PCIE Devices [Enabled]
Power on by PCI Devices [Enabled]
Power on by Modem Ring [Enabled]
Power on by Onboard LAN [Enabled]
Wake up by PS/2 KB/Mouse [S3]
Wake up by USB KB/Mouse [S3]
Restore On AC Power Loss [Off]
Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
↑↓→← :Move
Enter : Select
+/-/Spacebar : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save and Exit
ESC: Discard changes and Exit Setup
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ACPI Adware O/S (Yes)

This item supports ACPI (Advanced Configuration and Power Management Interface). Use this item to enable ACPI feature.

ACPI Suspend Mode [S3(STR)]

Use this item to define how your system suspends. In the default, S3(STR), the suspend mode is suspend to RAM, i.e., the system shuts down with the exception of a refresh current to the system memory.

Deep Power off Mode (Enabled)

This item allows users to enable or disable the Deep Power off Mode.

Power on by RTC Alarm (Disabled)

This system can be turned off with a software command. If you enable this item, the system can automatically resume at a fixed time based on the system RTC (realtime clock). Use the items below this one to set the date and time of the wake-up alarm. You must use an ATX power supply in order to use this feature.

Power on by PCIE Devices (Enabled)

This system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the PCIE LAN card. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCIE card.

Power on by PCI Devices (Enabled)

This system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call through the PCI device connected. You must use an ATX power supply in order to use this feature. Use this item to do wake-up action if inserting the PCI device.

Power on by Modem Ring (Enabled)

This system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the Modem. You must use an ATX power supply in order to use this feature.

Power on by Onboard LAN (Enabled)

This system can be turned off with a software command. If you enable this item, the system can automatically resume if there is an incoming call on the onboard LAN card. You must use an ATX power supply in order to use this feature.

Wake up by PS/2 KB/Mouse (S3)

This item enables or disables you to allow keyboard or mouse activity to awaken the system from power saving mode.

Wake up by USB KB/Mouse (S3)

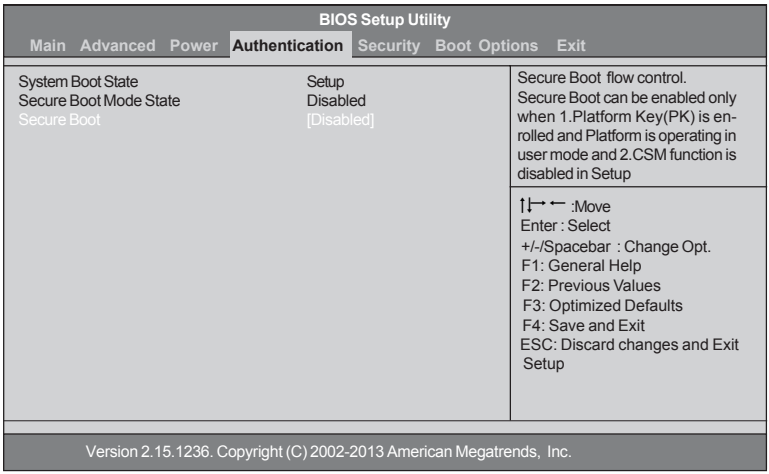
This item enables or disables you to allow keyboard or mouse activity to awaken the system from power saving mode.

Restore On AC Power Loss (Off)

This item defines how the system will act after AC power loss during system operation. When you set Off, it will keep the system in Off state until the power button is pressed.

Authentication Menu

This page sets secure boot mode.


BIOS Setup Utility
Main Advanced Power Authentication Security Boot Options Exit
System Boot State
Setup
Secure Boot Mode State
Disabled
Secure Boot
[Disabled]
Secure Boot flow control.
Secure Boot can be enabled only when 1.Platform Key(PK) is enrolled and Platform is operating in user mode and 2.CSM function is disabled in Setup
↑↓→← :Move
Enter : Select
+/-/Spacebar : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save and Exit
ESC: Discard changes and Exit Setup
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System Boot State (Setup)

This item shows the system boot state.

Secure Boot Mode State (Enabled)

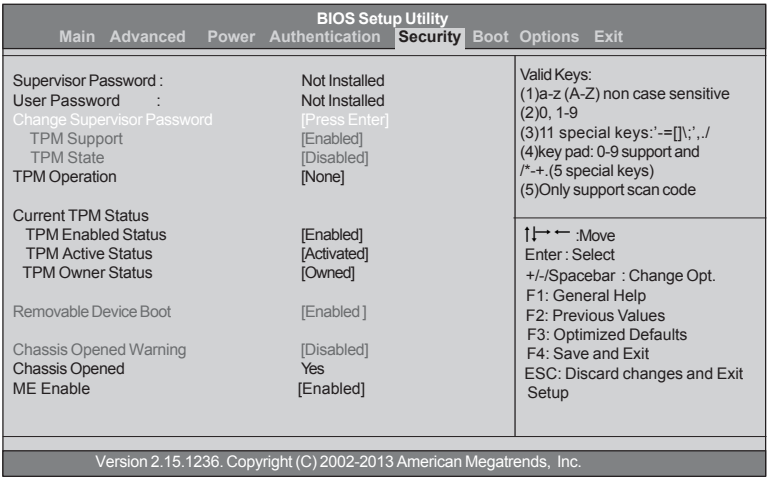
This item enables or disables the secure boot mode state.

Secure Boot (Enabled)

This item is used to control the secure boot flow, it is possible only if system runs in User Mode.

Security Menu

This page enables you to set setup administrator and password.



Supervisor Password (Not Installed)

This item indicates whether a supervisor password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

User Password (Not Installed)

This item indicates whether a user password has been set. If the password has been installed, Installed displays. If not, Not Installed displays.

Change Supervisor Password (Press Enter)

You can select this option and press <Enter> to access the sub menu. You can use the sub menu to change the supervisor password.

TPM Support (Enabled)

This item is set to support TPM (Trusted Platform Module) funtion.

TPM State (Disabled)

This item displays the TPM status to be enabled/disabled.

TPM Operation (None)

This item shows the information of the TPM operation.

TPM Enabled Status (Enabled)

This item displays the TPM status to be enable/disable.

TPM Active Status (Activated)

This item displays the TPM status to be active or not.

TPM Owner Status (UnOwned)

This item displays the TPM to be owned or not.

Removable Device Boot (Enabled)

This item enables or disables support the boot from USB mass storage devices.

Chassis Opened Warning (Enabled)

This item enables or disables the warning if the case is opened up, and the item below indicates the current status of the case.

Chassis Opened (Yes)

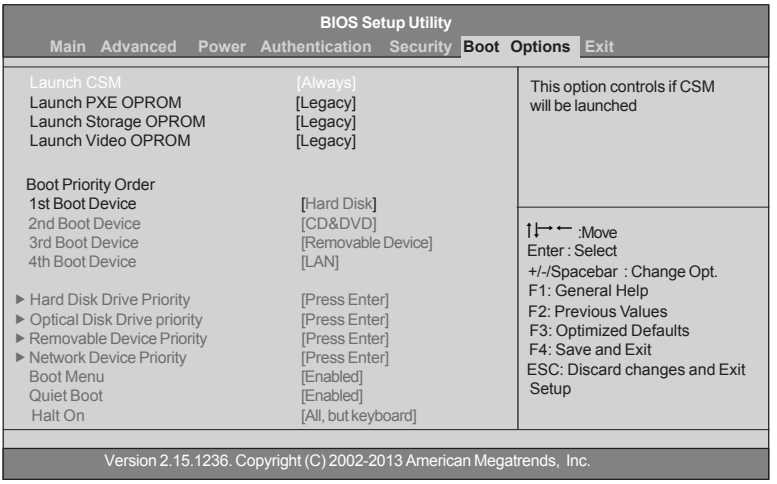
This item indicates whether the case has been opened.

ME Enable (Enabled)

Use this item to enable or disable the ME Firmware.

Boot Options Menu

This page enables you to set the keyboard Numlock state.


BIOS Setup Utility
Main Advanced Power Authentication Security Boot Options Exit
Launch CSM [Always]
Launch PXE OPROM [Legacy]
Launch Storage OPROM [Legacy]
Launch Video OPROM [Legacy]
Boot Priority Order
1st Boot Device [Hard Disk]
2nd Boot Device [CD&DVD]
3rd Boot Device [Removable Device]
4th Boot Device [LAN]
▶ Hard Disk Drive Priority [Press Enter]
▶ Optical Disk Drive priority [Press Enter]
▶ Removable Device Priority [Press Enter]
▶ Network Device Priority [Press Enter]
Boot Menu [Enabled]
Quiet Boot [Enabled]
Halt On [All, but keyboard]
This option controls if CSM will be launched
↑↓→← :Move
Enter : Select
+/-/Spacebar : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save and Exit
ESC: Discard changes and Exit Setup
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Launch CSM (Always)
This option controls if CSM will be launched.

Launch PXE OPROM (Legacy)
These items enables or disables launch PXE OPROM.

Launch Storage OPROM (Legacy)
These items enables or disables launch Storage OPROM.

Launch Video OPROM (Legacy)
These items enables or disables launch Video OPROM.

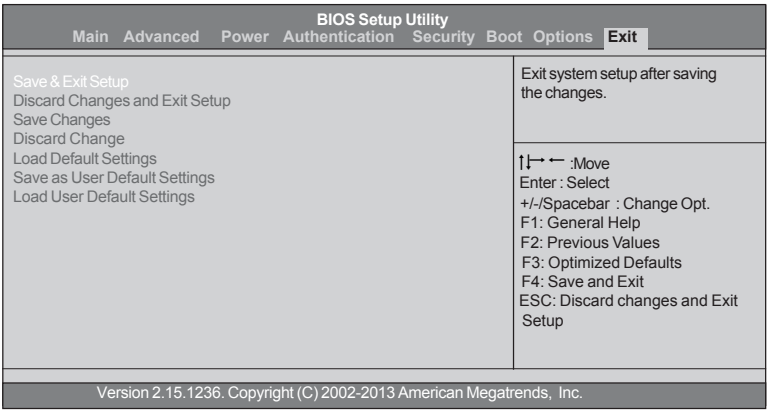
Boot Priority Order
This item enables you to set boot priority order.

1st/2nd/3rd/4th Boot Device
These items show the boot priorities.

Hard Disk Drive/ Optical Disk Drive/ Removable Device/ Network Device Priorities
These items enable you to specify the sequence of loading the operating system.
Press <Enter> to see the submenu.

Exit Menu

This page enables you to exit system setup after saving or without saving the changes.


BIOS Setup Utility
Main Advanced Power Authentication Security Boot Options Exit
Save & Exit Setup
Discard Changes and Exit Setup
Save Changes
Discard Change
Load Default Settings
Save as User Default Settings
Load User Default Settings
Exit system setup after saving the changes.
↑↓→← :Move
Enter : Select
+/-/Spacebar : Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save and Exit
ESC: Discard changes and Exit Setup
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Save & Exit Setup
This item enables you to save the changes that you have made and exit.

Discard Changes and Exit Setup
Use this item to discard any changes that you have made and exit.

Save Changes
Use this item to save the changes that you have made.

Discard Changes
Use this item to discard any changes that you have made.

Load Default Settings
This item enables you to restore the system defaults.

Save as User Default Settings
Use this item to save the changes that you have made as user defaults.

Load User Default Settings
Use this item to restore user defaults.

If you have made settings that you do not want to save, use the "Discard Changes and Exit" item and select [OK] to discard any changes you have made.

Updating the BIOS

You can download and install updated BIOS for this motherboard from the manufacturer's Web site. New BIOS provides support for new peripherals, improvements in performance, or fixes for known bugs. Install new BIOS as follows:

1 If your motherboard has a BIOS protection jumper, change the setting to allow BIOS flashing.

2 If your motherboard has an item called Firmware Write Protect in Advanced BIOS features, disable it. (Firmware Write Protect prevents BIOS from being overwritten.)

3 Prepare a bootable device or create a bootable system disk. (Refer to Windows online help for information on creating a bootable system disk.)

4 Download the Flash Utility and new BIOS file from the manufacturer's Web site. Copy these files to the bootable device.

5 Turn off your computer and insert the bootable device in your computer. (You might need to run the Setup Utility and change the boot priority items on the Advanced BIOS Features Setup page, to force your computer to boot from the bootable device first.)

6 At the C:\ or A:\ prompt, type the Flash Utility program name and the file name of the new BIOS and then press <Enter>. Example: AFUDOS.EXE 040706.ROM

7 When the installation is complete, remove the bootable device from the computer and restart your computer. If your motherboard has a Flash BIOS jumper, reset the jumper to protect the newly installed BIOS from being overwritten. The computer will restart automatically.

Chapter 4
Trouble Shooting

Start up problems during assembly

After assembling the PC for the first time you may experience some start up problems. Before calling for technical support or returning for warranty, this chapter may help to address some of the common questions using some basic troubleshooting tips.

a) System does not power up and the fans are not running.

1. Disassemble the PC to remove the VGA adaptor card, DDR memory, LAN, USB and other peripherals including keyboard and mouse. Leave only the motherboard, CPU with CPU cooler and power supply connected. Make sure the power cord is plugged into the wall socket & the switch on the Power Supply Unit (PSU) is turned " on " as well. Turn on again to see if the CPU and power supply fans are running.

2. Make sure to remove any unused screws or other metal objects such as screwdrivers from the inside PC case. This is to prevent damage from short circuit.

3. Check the CPU FAN connector is connected to the motherboard.

4. For Intel platforms check the pins on the CPU socket for damage or bent. A bent pin may cause failure to boot and sometimes permanent damage from short circuit.

5. Check the 12V power connector is connected to the motherboard.

6. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

b) Power is on, fans are running but there is no display

1. Make sure the monitor is turned on and the monitor cable is properly connected to the PC.

2. Check the VGA adapter card (if applicable) is inserted properly.

3. Listen for beep sounds. If you are using internal PC speaker make sure it is connected.
   a. continuous 3 short beeps: memory not detected
   b. 1 long beep and 8 short beeps: VGA not detected

c) The PC suddenly shuts down while booting up.

1. The CPU may experience overheating so it will shutdown to protect itself. Apply the thermal grease onto the CPU heatsink & ensure the CPU fan is well-connected with the CPU heatsink. Check if the CPU fan is working properly while the system is running.

2. From the BIOS setting, try to disable the Smartfan function to let the fan run at default speed. Doing a Load Optimised Default will also disable the Smartfan.

Start up problems after prolong use

After a prolong period of use your PC may experience start up problems again. This may be caused by breakdown of devices connected to the motherboard such as HDD, CPU fan, etc. The following tips may help to revive the PC or identify the cause of failure.

1. Clear the CMOS values using the CLR_CMOS jumper. Refer to CLR_CMOS jumper in Chapter 2 for Checking Jumper Settings in this user manual. When completed, follow up with a Load Optimised Default in the BIOS setup.

2. Check the CPU cooler fan for dust. Long term accumulation of dust will reduce its effectiveness to cool the processor. Clean the cooler or replace a new one if necessary.

3. Check that the 12V power & ATX connectors are fully inserted into the motherboard connectors. Make sure the latches of the cable and connector are locked into place.

4. Remove the hard drive, optical drive or DDR memory to determine which of these components may be at fault.

5. Check whether there is any bulked up electrolytic capacitor or abnormal component.

Maintenance and care tips

Your computer, like any electrical appliance, requires proper care and maintenance. Here are some basic PC care tips to help prolong the life of the motherboard and keep it running as best as it can.

1. Keep your computer in a well ventilated area. Leave some space between the PC and the wall for sufficient airflow.

2. Keep your computer in a cool dry place. Avoid dusty areas, direct sunlight and areas of high moisture content.

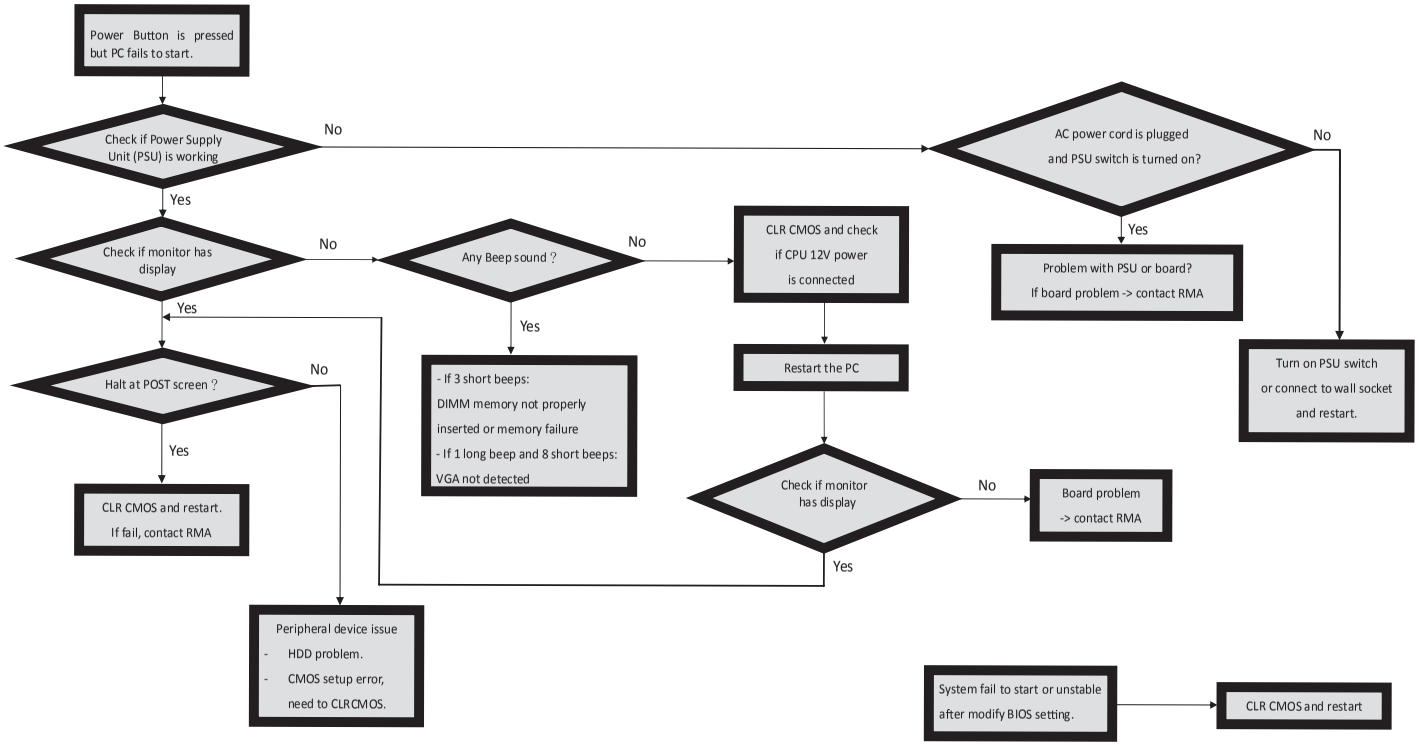
3. Routinely clean the CPU cooler fan to remove dust and hair.

4. In places of hot and humid weather you should turn on your computer once every other week to circulate the air and prevent damage from humidity.

5. Add more memory to your computer if possible. This not only speeds up the system but also reduces the loading of your hard drive to prolong its life span.

6. If possible, ensure the power cord has an earth ground pin directly from the wall outlet. This will reduce voltage fluctuation that may damage sensitive devices.

Basic Troubleshooting Flowchart


Power Button is pressed but PC fails to start.
Check if Power Supply Unit (PSU) is working
No
Yes
AC power cord is plugged and PSU switch is turned on?
No
Yes
Problem with PSU or board? If board problem -> contact RMA
Turn on PSU switch or connect to wall socket and restart.
Check if monitor has display
No
Yes
Any Beep sound ?
No
Yes
CLR CMOS and check if CPU 12V power is connected
Restart the PC
Check if monitor has display
No
Board problem -> contact RMA
Yes
- If 3 short beeps: DIMM memory not properly inserted or memory failure
- If 1 long beep and 8 short beeps: VGA not detected
Halt at POST screen ?
No
Yes
CLR CMOS and restart. If fail, contact RMA
Peripheral device issue
- HDD problem.
- CMOS setup error, need to CLRCMOS.
System fail to start or unstable after modify BIOS setting.
CLR CMOS and restart

Memo